Bringing New Energy Technologies to the Market

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SBIR/STTR and the Commercialization Challenge
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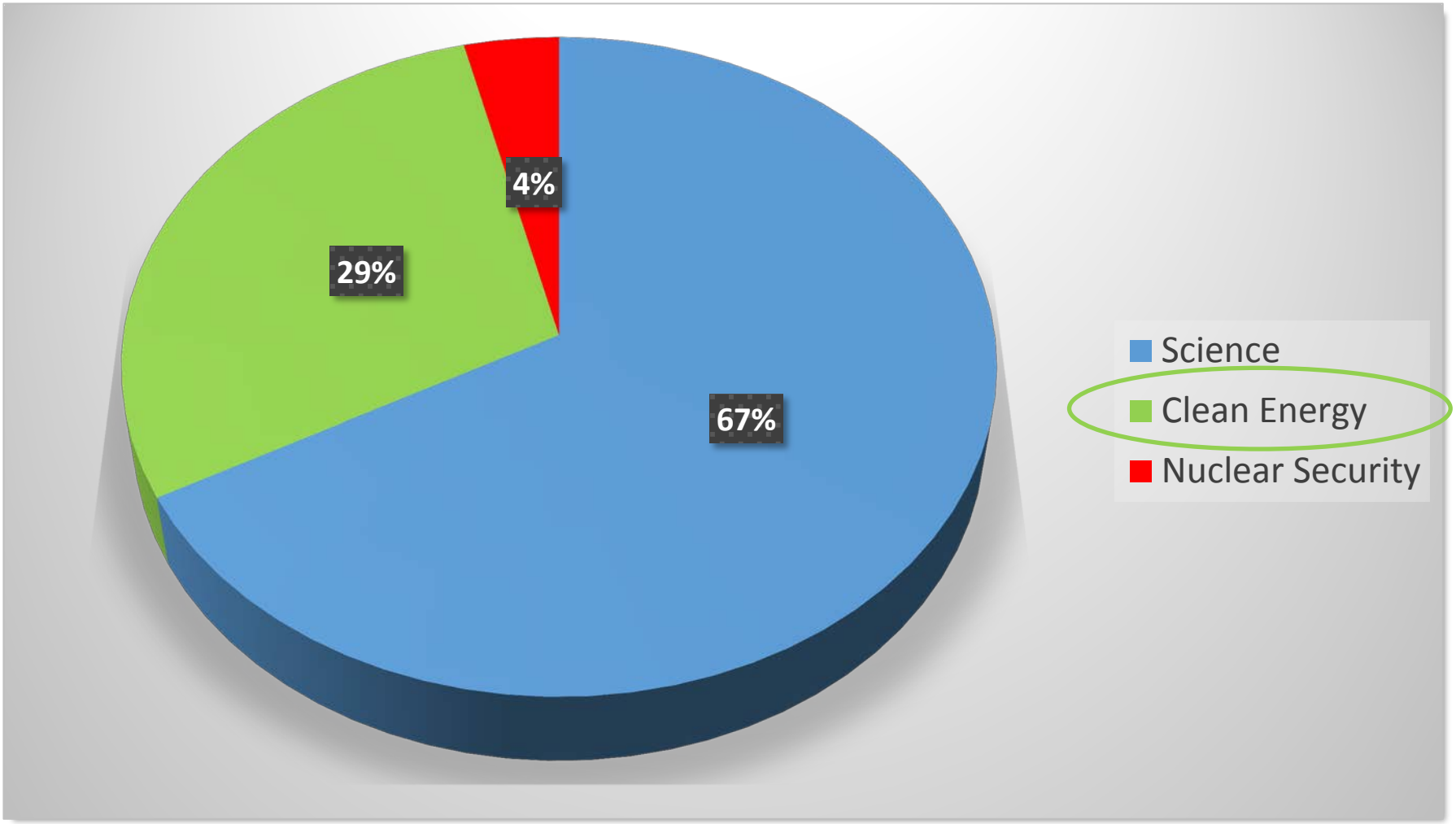
DOE's SBIR/STTR Portfolio

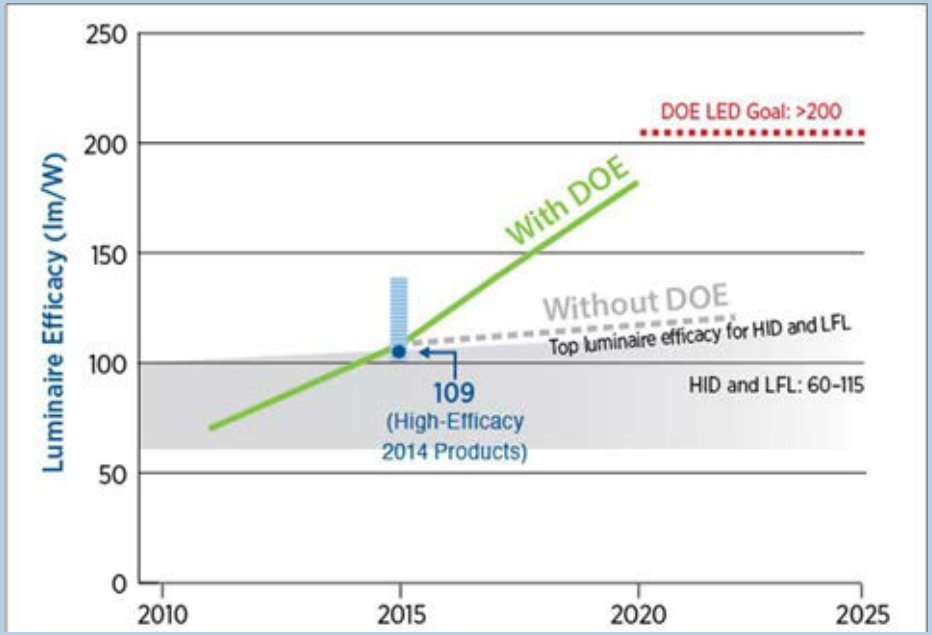


Commercialization and Public-Private Partnerships

- How does an government agency discover the critical issues that are limiting progress in clean energy?
- How do we design programs that effectively address those issues and bring innovative solutions to the market?
- Targeted public-private partnerships are used by DOE to address these questions

Example: Solid State Lighting (SSL) Program

- EPACT 2005 & EISA 2007 direct DOE to support research, development, demonstration, and commercial application activities related to advanced SSL technologies



Solid State Lighting (SSL) Public Private Partnership

- To accomplish its objectives, the SSL program partners with
  - Research community
  - Industry
  - Next Generation Lighting Industry Alliance (NGLIA)
  - Illuminating Engineering Society of North America (IES)
  - International Association of Lighting Designers (IALD)
- These partnerships enable the SSL program to address R&D roadmaps, demonstration projects and standards

Table 5.6 Breakdown of Warm-White[1] LED Luminaire Efficiency Projections

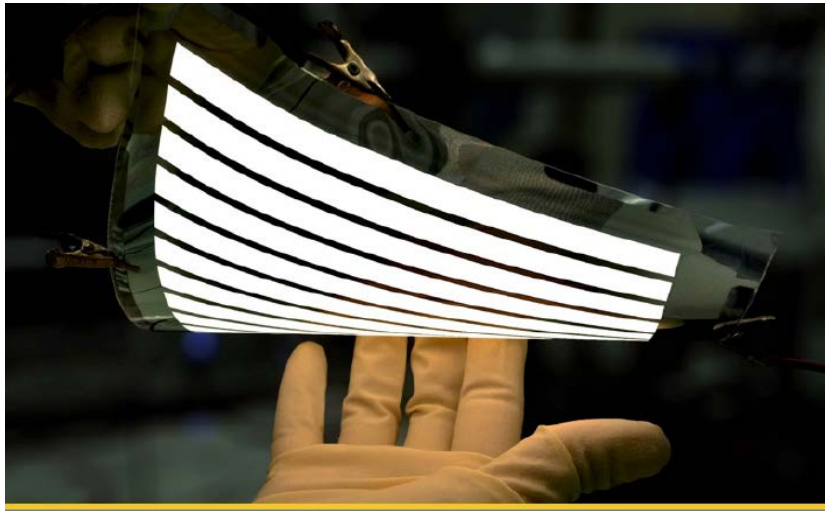
Efficiency Channel	2014	2015	2020	Goal
Package Efficacy Projection[2] (lm/W)	146	162	220	250
Thermal Efficiency Droop (increased T_{op})	87%	88%	93%	95%
Driver Efficiency	86%	87%	93%	96%
Fixture/Optical Efficiency	87%	89%	94%	96%
Current Efficiency Droop Correction Factor (reduced I_{op})	1.14	1.13	1.09	1.05
Overall Luminaire Efficiency	74%	77%	89%	92%
Luminaire Efficacy[3] (lm/W)	108	125	196	230

Notes:
1. Warm-white packages and luminaires have CCT=3000K and CRI=80.
2. Package efficacy projections are for the warm-white pc-LED, per Table 5.8
3. Luminaire efficacy is obtained by multiplying the package efficacy by the overall luminaire efficiency.

Commercialization Benefits to SBIR Applicants

- SSL program documentation & workshops provide both information and contacts for commercialization planning: customers, competitors, performance and cost targets, supply chain, . . .

SBIR Success Story: UDC



UDC has developed many OLED lighting prototype and test panels with the help of DOE financial support. *Photo credit: Universal Display Corporation.*

"DOE R&D funding has been invaluable to UDC. In the early years, it provided validation of our technology and reduced the financial risk of pursuing new technical approaches and focusing on lighting in addition to the more immediately profitable display market. Later on, it was instrumental in allowing us to form key partnerships with other U.S. lighting companies."

— Mike Hack, UDC Vice President of Business Development

MARKET IMPACTS

of UDC OLED Technology

From 2003–2014:

- Demonstrated OLED lighting device efficiency increased from 10 lm/W to more than 100 lm/W
- Demonstrated OLED lighting device lifetime increased from 10 hours to more than 100,000 hours
- The number of UDC employees grew from 25 to 144
- UDC revenues grew from $7 million to more than $191 million

Benefits of Public Private Partnerships to SBIR/STTR

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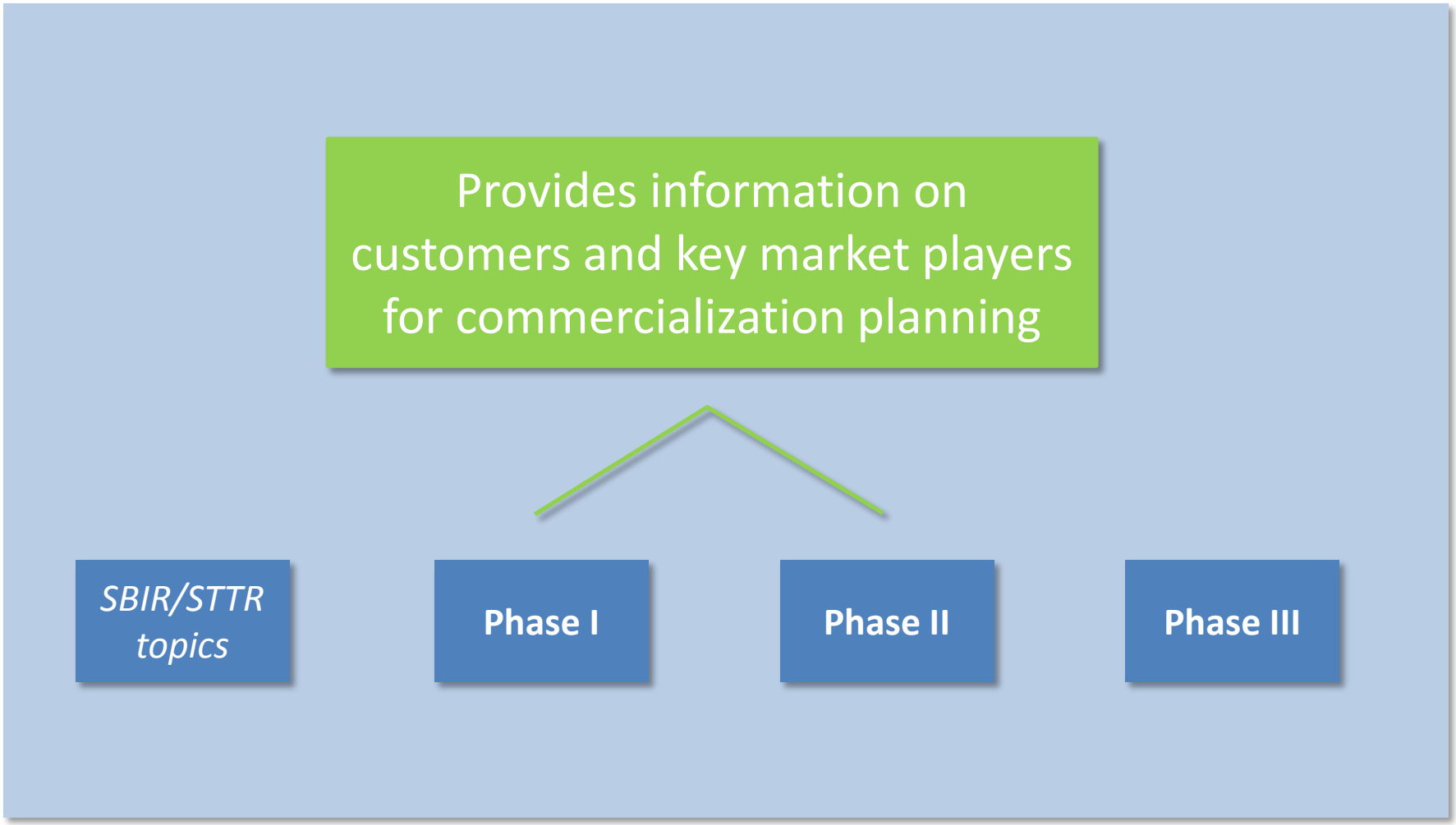
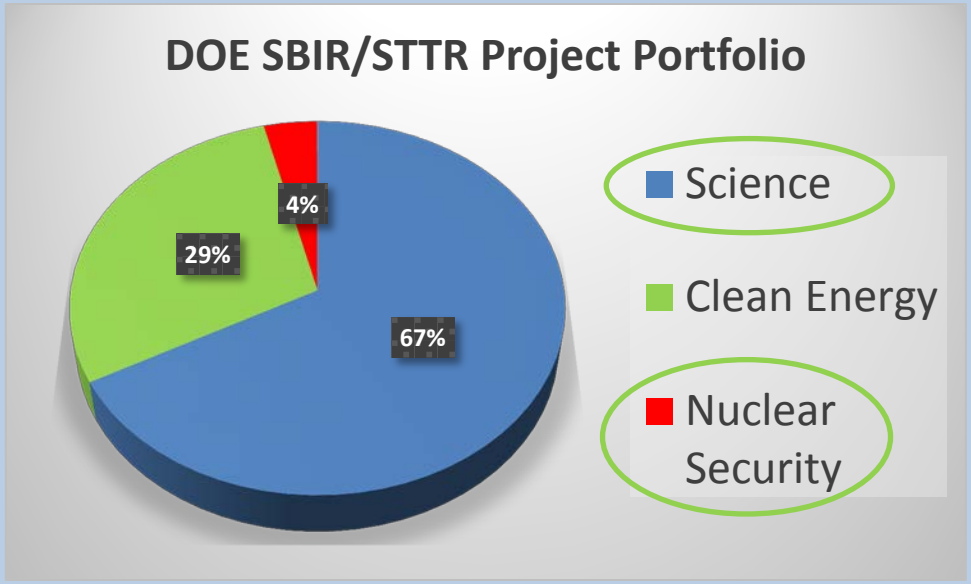


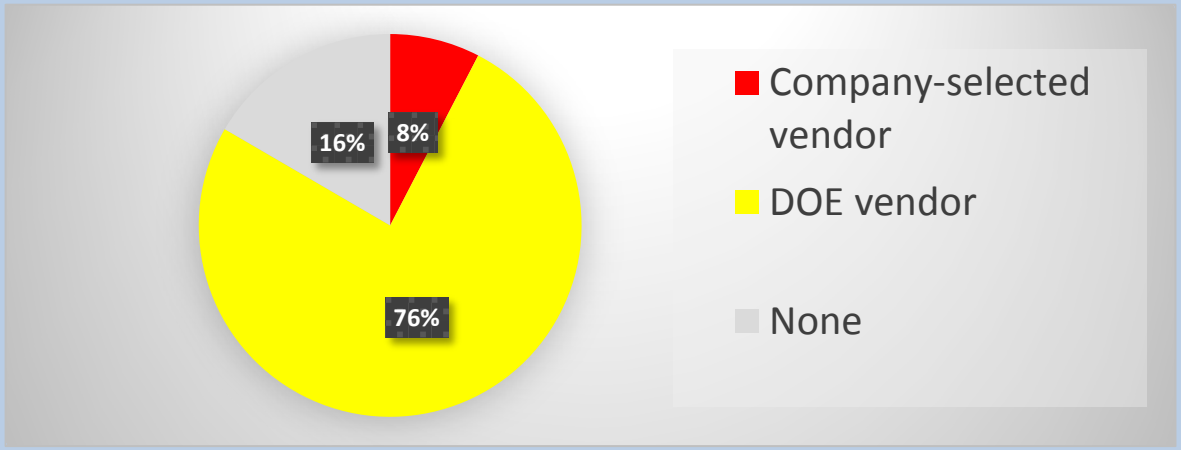
Learning from Public Private Partnerships

- How can we apply the benefits of these partnerships to other technology areas?
- We will be exploring how we can use administrative funding to provide similar industry information for other parts of its portfolio



Increasing Commercialization Assistance

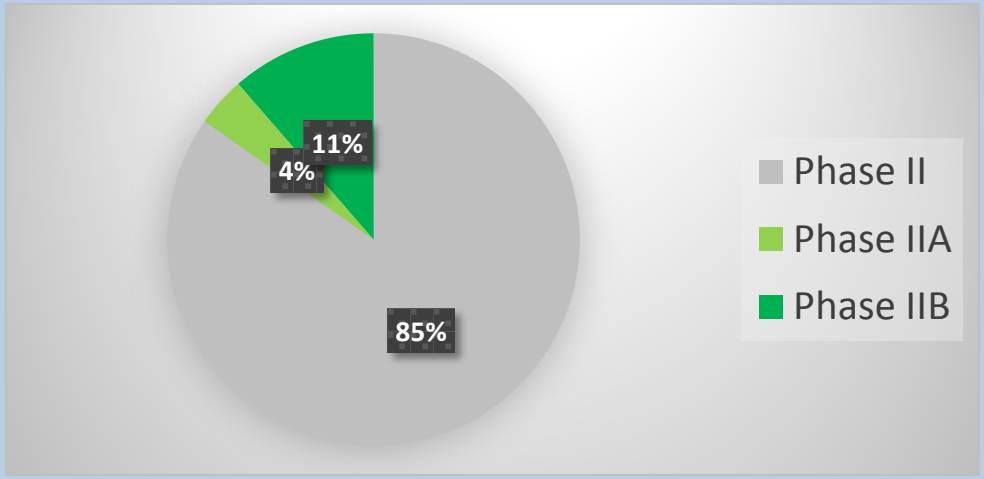
- DOE Commercialization Assistance Utilization (FY 2015 Phase I)



- Increased commercialization assistance
  - Current commercialization assistance limits
    - Phase I: $5,000 (3.3% of Phase I guideline award amount)
    - Phase II: $10,000 (1.0% of Phase II guideline award amount)
  - We would recommend doubling these limits , particularly in Phase I, to provide greater flexibility in providing commercialization assistance.

Providing Greater Flexibility in Phase II

- Phase II Awards (FY 2014-2015)



- Increased Sequential Phase II Flexibility
  - Allow up to two sequential Phase II awards per Phase II project so that more than one agency can leverage the innovation
  - Allow sequential Phase II awards to include non-R&D costs (e.g. to address regulatory issues)